

NEW APTEROUS CARVENTINAE FROM NEW ZEALAND (HETEROPTERA: ARADIDAE)

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Abstract.—From New Zealand there are known, to date, six apterous genera of Carventinae, each with only one described species. Two new species, *Acaraptera waipouensis*, n. sp. and *Leuraptera yakasi*, n. sp., both from North Island, are described, and their general habitus and male genitalic structures are figured. Additional data are provided for *Acaraptera myersi* Usinger and Matsuda.

The subfamily Carventinae is represented in New Zealand so far by six apterous genera (*Acaraptera*, *Carventaptera*, *Leuraptera*, *Lissaptera* and *Neocarventus*, all described by Usinger and Matsuda, 1959 and *Clavaptera* Kirman, 1985) each with only one species. They seem to be inhabitants of the moss and leaf litter layer of indigenous forests.

Through the kindness of Dr. R. T. Schuh, American Museum of Natural History, New York, I had the opportunity to examine a lot of Carventinae from New Zealand, with two new species which are described below. The same new species were represented in a small lot of Aradidae from the North Island of New Zealand I acquired years ago for my collection.

Measurements were taken with a micrometer eyepiece, 40 units = 1 mm.

I particularly thank Randall T. Schuh (AMNH) for the loan of the interesting material and linguistical advise, and S. Tatzreiter, University of Innsbruck for the scanning electron micrographs.

Acaraptera waipouensis, new species

Figs. 1a, b; 2a, b; 3a-e; 4c, d

Diagnosis. Distinguished from the only known species of this genus occurring in New Zealand, *A. myersi* Usinger and Matsuda 1959, by a set of characters, e.g., anterolateral angles of pronotum less angularly produced, the lower portion of its anterior margin wider and only slightly convex, metanotum not fused with mediotergite I and clearly separated by a transversal suture; mediotergites I and II separated at middle but fused laterally.

Description. Male. Apterous; body ovate, smooth and shiny beneath incrustation, appendages, head, lateral borders of body and pygophore sparsely granulate.

Head. Shorter than width across eyes (22:32); anterior process of gena slightly produced over clypeus, its apex rounded. Antenniferous tubercles with subparallel lateral margins, apices blunt. Eyes globose, granular. Postocular tubercles forming rounded lobes not reaching lateral margin of eyes, strongly converging posteriorly. Vertex with 2(1+1) longitudinal, anteriorly diverging carinae and 2(1+1) ovate smooth

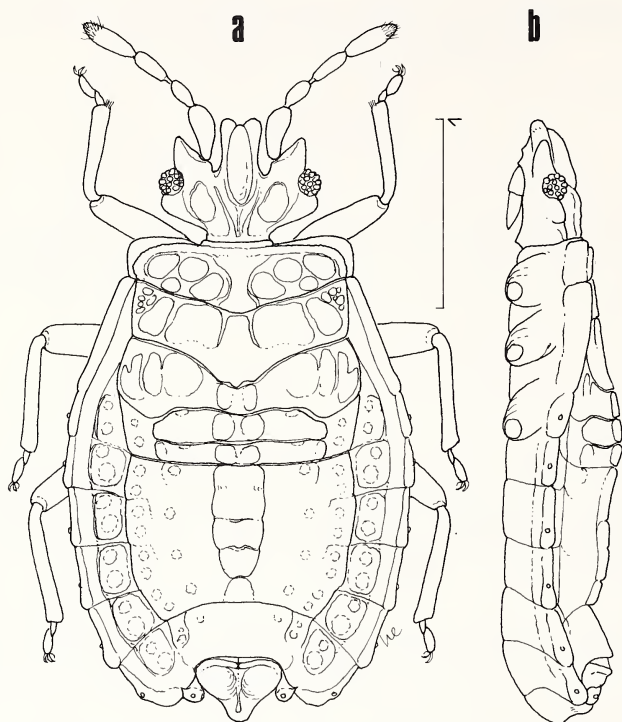


Fig. 1. a-b. *Acaraptera waipouensis*, n. sp. a. Male paratype, dorsal habitus. b. Lateral view.

depressions laterad. Antennae longer than width of head across eyes (36:32), relative length of antennal segments I to IV = 11:5.5:8.5:11. Rostrum short, not reaching posterior margin of head, rostral atrium open. Rostral groove wide and closed posteriorly, its lateral borders granulate. Posterior to the rostral groove is a paired cuticular structure as shown in Figure 4c which is yet unreported in Aradidae; its function was not investigated.

Thorax. Pronotum more than $3\times$ wider than long (43:13.5), anterolateral lobes angulately rounded, placed on a lower level than disk; anterior margin at most slightly produced over thin collar. Disk with a median flat elevation and 8(4+4) flat rounded elevations laterad, delimited laterally and anteriorly by a granulate carina; posterior margin produced backward.

Mesonotum longer than pronotum (15.5:13.5) with subparallel lateral margins delimited by the reflexed portion of pleura, which extends from anterior margin of dorsal laterotergite (DLTg) II to posterior margin of pronotum; surface with ill defined flat elevations, raising toward projecting posterior margin which is bisinuate at middle.

Metanotum shortest at middle with 2(1+1) widening lateral lobes, separated from mediotergite I by a deep suture; elevated along median line, there bearing 2(1+1) distinct oblique elevations depressed between them; lateral portion with flat irregular elevations.

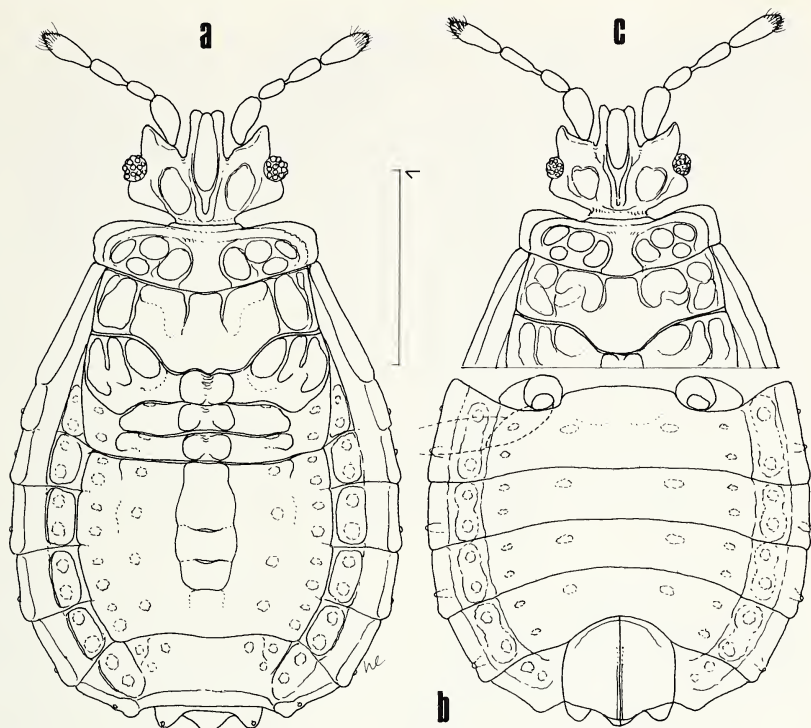


Fig. 2. a–b. *Acaraptera waipouensis*, n. sp. a. Female paratype, dorsal habitus. b. Venter. c. *Acaraptera myersi*, female holotype, dorsal habitus (after Usinger and Matsuda).

Mediotergites (MTg) I and II elevated at middle, with the same medially depressed oblique elevations as metanotum; fused at depressed lateral portions, but clearly separated by a deep suture at middle. DLTg I+II fused, triangular.

Abdomen. Tergal plate formed by completely fused MTg III to VI with slightly convex lateral margins elevated along median line, with a median, flattened elongate elevation bearing marked scent gland openings; DLTg III to VI deeply depressed on inner half, bearing 2 glabrous impressions each, lateral margin carinate, increasingly thickened and slightly protruding posteriorly. DLTg II and III fused. MTg VII elevated posteriorly, anterolateral angles rugose. DLTg VII rounded posteriorly. Paramergites VIII short, rounded with a laterally pointed tip.

Male Genitalic Structures. Pygophore pyriform with a longitudinal median impression flanked by 2(1+1) bulbous elevations laterally; surface granular, anterior margin carinate. Parameres as Figure 3a–e.

Ventral Side. Pro-, meso- and metasternum medially fused, but weak transverse sutures are present. Sternites I to III completely fused. Spiracles II to VII lateral and visible from above, VIII subterminal.

Legs slender, trochanters distinct, claws with thin pulvilli.

Females. Similar to male but larger and body more rounded laterally. The median ovate elevation on MTg VI is mostly missing or scarcely indicated. DLTg VII with

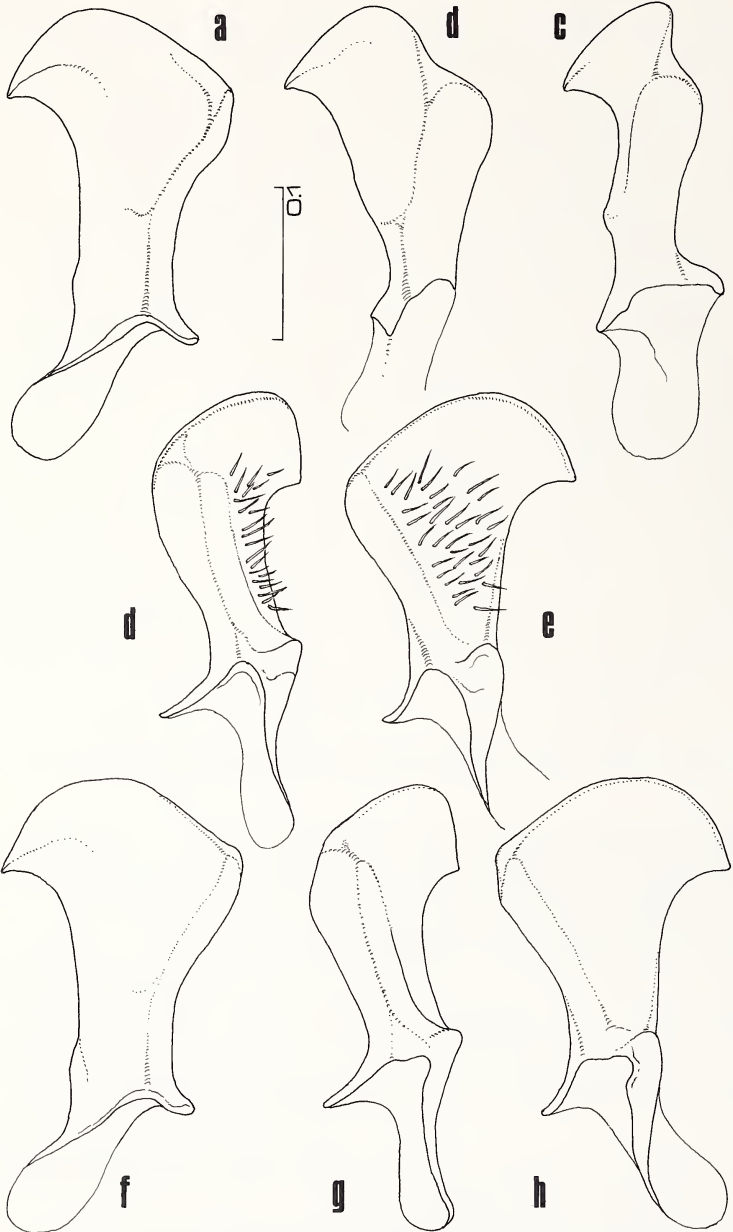


Fig. 3. a-e. *Acaraptera waipouensis*, n. sp., left paramere in different positions. f-h. *Acaraptera myersi*, left paramere.

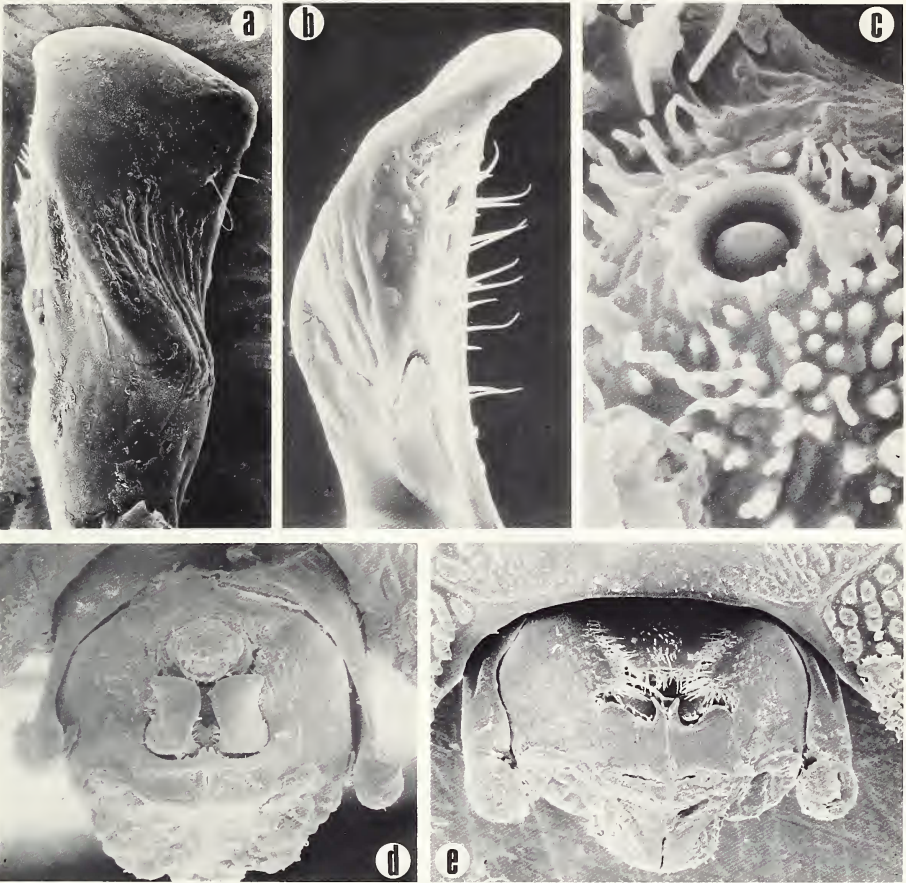


Fig. 4. a–b. *Acaraptera myersi*. a. Left paramere dorsal. b. Right paramere lateral. c–d. *Acaraptera waipouensis*, n. sp. c. Cuticular structure on ventral posterior margin of head, on top right the rostral groove is visible. d. Pygophore dorsal. e. *Leuraptera yakasi*, n. sp., pygophore dorsal.

nearly straight lateral margins converging posteriorly. Paratergites VIII triangularly rounded, not reaching apex of triangular tergite IX.

Coloration. Amber with variable extension of darker parts as medial part of pro- and mesonotum, metanotum and MTg I+II except the median oblique elevations, DLTg I+II, median elevation of tergal disk except a light spot over MTg IV and V, lateral parts of MTG VII and pygophore. Females are mostly darker with piceous abdomen but with amber markings of glabrous impressions and posterior-exterior angles of DLTg III to VI.

Holotype. ♂, New Zealand ND: Waipoua State Forest, ca. 150 m, Toronui Track, 13 April 1980 A. Newton & M. Thayer leg. in kauri, podocarp, broad-leaf, nikau-palm forest leaf and log litter (AMNH).

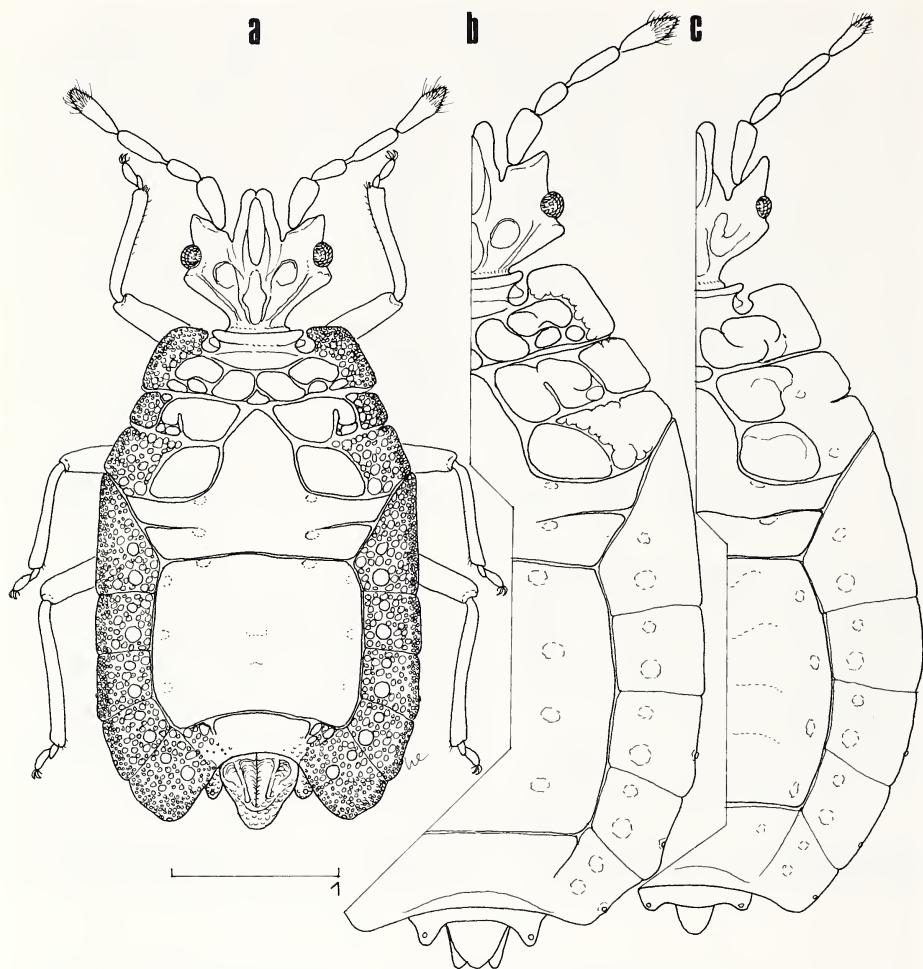


Fig. 5. a-b. *Leuraptera yakasi*, n. sp. a. Male paratype, dorsal habitus. b. Female paratype, dorsal habitus. c. *Leuraptera zealandica* Us. & Mats., female allotype, dorsal habitus (after Usinger and Matsuda).

Paratypes. 2♂♂ 3♀♀ collected with holotype; 2♀♀ collected in same forest and circumstances and by same collectors but Kauri Ricker Track, 13 April 1980; 4♂♂ 1♀ same but Wairau summit 387 m 14 April 1980; 1♀ 11-14 April 1980; 1♀ same but Waikohatu Bridge 290 m 12 April 1980; 1♀ same but Yakas Tree Track 350 m 13 April 1980 (all in AMNH); 4♂♂ 6♀♀ Neuseeland, Nordinsel, Intamoe Rg. N. Dargaville Okt. 86 Haller (coll. EH).

Measurements. Holotype male: Length 3.15 mm, width of abdomen across tergite III, 1.72 mm; female: length 3.35-3.50 mm, width of abdomen across tergite IV, 2.05-2.10 mm; relative length of antennal segments I to IV = 12:6:9.5:11.5. Paratype males vary in size from 3.1 to 3.2 mm.

Etymology. Named after its type locality, Waipoua State Forest.

Acaraptera myersi Usinger and Matsuda, 1959

Figs. 2c; 3f-h; 4a, b

Acaraptera myersi Usinger and Matsuda 1959:149 (descr., fig. ♀). Lee and Pendergrast 1976:492 (stylets). Kormilev and Froeschner 1987:65 (cat.).

Material Examined. There are several specimens which have been collected with holotype and paratypes of *A. waipouensis*, n. sp. at Waipou State Forest in April 1980, lg. A. Newton & M. Thayer (AMNH) and few from Intamoe Range N. Dargaville lg. Haller (coll. EH). Further records are from New Zealand BP: Tarukenga Scenic Reserve 9 km W. Ngongotaha, ca. 490 m, 2 April 1980 (1♂, 3♀♀); NZ TO: Opepe Reserve Lake Roroiti 610–650 m, St. Arnaud Track 25 March 1980 (1♀), all lg. A. Newton and M. Thayer (AMNH).

As the genitalic structures are not yet known, the parameres being similar to those of *A. waipouensis*, n. sp. are figured (Figs. 3f-h; 4a, b).

Acaraptera, new species

There is a single female from North Island, Intamoe, Rg. N. Dargaville in my collection, which differs considerably in some characters from both other species of New Zealand *Acaraptera*: Smaller, body less rounded (like ♂ of *A. waipouensis*), fusion of thorax as in *waipouensis*, but oblique elevations at middle of metanotum, MTg I and II evanescent. Tergal plate with distinct sutures delimiting mediotergites III to VI. Length 2.95 mm, width of abdomen across tergite III 1.65 mm.

Due to the single specimen at hand I refrain from describing the taxon until more material is available.

Leuraptera yakasi, new species

Figs. 4e; 5a-c

Diagnosis. Distinguished from the only known species of this genus *L. zealandicus* Usinger and Matsuda 1959, by the following characters: head wider, antennal segment III longer than I, antenniferous tubercles and clypeus shorter; collar not produced over anterolateral margin of pronotum; lateral portion of mesonotum completely separated from metanotum by a deep sulcus; suture between MTgI and II only laterally visible, lacking at middle where tergites are completely fused. Body of female less rounded, subparallel (see Fig. 5b, c).

Description. Male. Apterous; body parallel (♂) or subparallel (♀) with thorax constricted anteriorly; surface smooth and matte beneath incrustation, except head, lateral parts of thorax and DLTg's which are covered with shiny granules of different size. Appendages finely granulate.

Head. Distinctly wider across eyes than long (37:31), anterior process of genae longer than clypeus, its apices rounded and contiguous. Antenniferous tubercles short, its apices blunt. Eyes semiglobose. Postocular tubercles angular, reaching lateral margin of eyes, strongly converging to constricted neck region. Vertex with a strong median longitudinal carina flanked by 2(1+1) smooth elevations and posteriorly converging carinae on either side. Antennae about $1.3\times$ as long as width across eyes (49:37), segment III pedunculate at base; relative length of segments I to IV = 12:9:

14:14. Rostrum short, not reaching posterior margin of head, arising from a slit-like atrium; rostral groove large, its lateral margins formed by granulate carinae.

Thorax. Pronotum $3 \times$ as wide as long (54:17) with nearly straight but upturned lateral margins, converging anteriorly; anterolateral angles rounded, deeply incised before collar, the latter ring-like bearing $2(1+1)$ rounded tubercles dorsolaterally and $2(1+1)$ laterally projecting tubercles on a lower level. Collar depressed posterior to ring-like rounded ridge, followed by a transverse elongate ridge posteriorly. Disk with irregular flat elevations separated by deep sulci, irregularly granulate laterad.

Mesonotum separated into $2(1+1)$ lateral lobes by a prominent median elevation which is highest on mesonotum and comprises the fused median portions of meso- and metanotum and fused MTg I + II. Lateral lobes with a smooth hook-like sclerite on either side, lateral portion densely granulate, separated by a deep suture from metanotum.

Metanotum also split by fused median elevation into $2(1+1)$ lobes which show a smooth ovate sclerite on inner side; roughly granulate laterad.

MTg I and II fused at middle, separated laterally by a distinct suture. Lateral margin straight, strongly converging posteriorly.

Abdomen. Tergal disk flat, MTg III to VI completely fused, lateral margins slightly convex. DLTg II and III fused; lateral margin of DLTg II to V parallel, VI converging posteriorly, VII rounded, surface roughly granulate. MTg VII smooth, elevated posteriorly, basolateral angles granulate. Paratergites VIII small with rounded apices reaching only $\frac{1}{2}$ of pygophore.

Male Genitalic Structures. Pygophore pyriform with a shorter dorsal lobe and a projecting lower lobe, the first with a median cleft and $2(1+1)$ longitudinal carinae converging posteriorly, depressed laterad. Anterior margin with a transverse carina. Posterior rim of dorsal opening with $2(1+1)$ large projecting sclerites (like parandria of Aradinae) which are contiguous along median line, with rounded anterolateral lobes and pointed, bent downward apices at middle which are fused posteriorly to the rim, but are flexible and can be upfolded along the median cleft, a flexible line following the posteriorly converging carinae (Fig. 4e). Opening of pygophore laterally with nose-like projections which are densely beset with long setae. Parameres could not be studied.

Ventral Side. Smooth and shiny medially, pleura and ventral LTg's granulate, pygophore transversely rugose. Spiracles II to IV ventral, gradually approaching lateral margin but not visible from above; V to VII lateral and visible from above; VIII terminal.

Legs slender, trochanters distinct, claws with thin long pulvilli.

Female. Larger than male and body more rounded laterally. Posterior margin of MTg VII sinuate; paratergites VIII produced posteriorly and angularly rounded, reaching $\frac{1}{2}$ of tricuspidate tergite IX.

Coloration. Uniformly ferrugineous, partly darkening along deep sutures of thorax and abdomen.

Holotype. ♂, New Zealand ND: Waipua State Forest, Yakas Tree Track 350 m 11 April 1980 in mixed broadleaf podocarp forest, leaf and log litter, lg. A. Newton and M. Thayer (AMNH).

Paratypes. 1♂ 1♀ collected with holotype (AMNH); 1♂ 2♀♀ Neuseeland, Nordinsel, Intamoe Rg. N. Dargaville, Okt. 86 lg. Haller (coll. EH).

Measurements. Holotype male: Length 3.80 mm, width of abdomen across tergite IV, 1.95 mm; Female: length 4.90–4.95 mm, width of abdomen, 2.75 mm; relative length of antennal segments I to IV = 14:9:16:15. Paratypes male vary in size from 3.50 to 3.80 mm.

Etymology. Named after the type locality, Yakas Tree Track.

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